

## REMARKS

Claims 18 and 22 have been hereby amended.

Claim 18 has been amended to first specify that the claimed member is a formed metal member. This amendment serves to clarify the subject invention.

Claim 18 has been further amended to characterize the “force” that the structural member is designed to absorb. The amendment serves to indicate that a portion of the force is applied in the axial direction of the first end of the member. Although this specific wording is not contained in the disclosure, the specification does clearly indicate that the invention “can be used for either end of the side rails to accommodate front or rear impacts” (para. [0031] of the published application). Further, the background section of the application indicates that the invention is directed to “end to end” collisions, which “translates the force of the impact through the side rails” (para. [0005] as published). Thus, it would be apparent to persons skilled in the art that the “force” discussed through the application has at least some axially directed element for absorption by the member.

Claim 18 has also been amended to further clarify that the reduced cross sectional area is provided along the tapered portion and not over the length of the member.

Finally, claim 22 has been amended to correct a clerical error since the phrase “the generally constant second wall thickness” in original claim 22 does not have an antecedent.

### 1) Objections to drawings

Applicant respectfully traverses the objection to the drawings. In the office action, the examiner has first raised an objection to the drawings wherein the examiner is requiring the drawings to be

amended to show the “force” recited in claim 18.

The examiner has mistakenly indicated that the “force” mentioned in claim 18 is “a feature of the invention”. This is incorrect. The features of the invention comprise the various elements and structural characteristics of the member that are designed to absorb a force. Thus, the force itself is not a feature of the invention. Indeed, such a force would only occur in the case of a collision.

Moreover, it is believed that the more descriptive recitation of the “force” in amended claim 18 serves to obviate this objection to the drawings. That is, the force recited in claim 18 is now characterized in terms of a direction.

## 2) Rejections under 35 USC 102(b)

Applicant respectfully traverses the rejection of Claims 18 and 20 as being anticipated by Tate (US 6,406,088).

The examiner states that Tate teaches a member having a body “with a generally constant first wall thickness” and refers to the thickness  $\delta$  as shown in figure 3 of Tate. However, this is clearly incorrect. The thickness noted in Tate is taken at a finite point along the length of a tapered portion, the thickness of which is gradually reduced from one end to the other. This is specifically taught in Tate as in, for example, column 2, lines 18 to 21:

*“Furthermore, as is illustrated in FIG. 3, the wall thickness  $\delta$  of a crash rail 20 tapers linearly from a largest wall thickness  $\delta$  at the root portion 22 to a smallest wall thickness  $\delta$  at the tip portion 21.”* (emphasis added).

In addition, in column 3, lines 10-12, Tate further specifies that:

*“The tapering cross-sectional area of the crash rails 20 and the tapering wall thickness  $\delta$  help the crash rails 20 to resist bending.”* (emphasis added)

Thus, Tate very clearly teaches a crash rail comprising a single element having two essential elements, namely, a tapered cross-sectional area and a tapering wall thickness, both of which extend along the entire length of the rails. Tate also very clearly teaches away from any variation in this structure.

As clearly recited in claim 18, the present invention comprises a member having two distinct sections: a body and a tapered portion. Each of such sections is provided with a wall thickness that is generally constant over the lengths thereof. As discussed above, it is submitted that Tate clearly does not teach such a structure and, moreover, the teachings thereof cannot be modified in any way to arrive at invention claimed in claim 18.

Notwithstanding the above comments, claim 18 has been amended to specify that the claimed invention comprises a formed metal member. This recitation serves to even further distinguish the present invention from the teaching of Tate. Specifically, Tate is directed solely to a “composite material comprising fibres arranged in a resin matrix” (col. 2, lines 10-11). Tate further differentiates such composite material from metal members. In this regard, the examiner is directed to the passage from column 2, line 66, to column 3, line 5:

*“Metal crash rails known in the art have a high tendency to buckle on impact, but the crash rails 20 of the present invention are designed not to buckle. Instead, during an impact the crash rails 20 gradually disintegrate from their tip portions 21 progressing towards the root portions 22 as the resin matrix of each rail 20 detaches from the fibres 25, 26, 27, 28 it encases.”*

Thus, it is very clear that Tate does not in any way teach or suggest a metal member as in the present invention. Indeed, Tate specifically distinguishes the composite material taught therein from metal-based elements.

Accordingly, it submitted that claim 18 and claim 20 depending therefrom stand both novel and non-obvious over Tate.

### 3) Rejection of claims 19 and 21 under 35 USC 103(a)

Applicant respectfully traverses the rejection of Claims 19 and 21 as being obvious over the combination of Tate and Shohei (JP 61074713).

Firstly, as indicated above, Tate is unequivocally directed to a composite fibre/resin structure and teaches away from any metal element. This fact alone is submitted as rendering the examiner's rejection moot. That is, claims 19 and 21, which depend from claim 18, are directed to a two section member wherein one section is tapered and wherein both sections have generally constant but differing wall thicknesses. There is no teaching or suggestion in Tate of such a structure.

The examiner states that the only difference between claim 19 and the teaching of Tate lies in the feature of the entire length of the tapered section comprising a generally constant wall thickness (i.e. the "second wall thickness"). The examiner then relies on Shohei to suggest that such a structure can be combined with Tate to result in the invention claimed in claims 19 and 21. However, such a combination is incorrect and impossible to make.

In making the rejection, the examiner refers to figure 2(B) of Shohei. However, figure 2(B) is clearly an intermediary step in the entire process taught in the reference. The examiner suggests that a person skilled in the art would be able to separate out this one step and incorporate the shown structure into the teaching of Tate. However, it is submitted that such a drastic departure from the teaching of Shohei would be well beyond the realm of an obvious combination.

Thus, there are a number of faults in the examiner's analysis:

- 1) Tate very clearly specifies that the rail taught therein must be made of a composite fibre/resin combination and not metal.
- 2) Tate specifies that such rail must comprise a single component, must have a tapered outer diameter and must have a tapered wall thickness along its length.

3) Shohei teaches a metal tubular element having a tapered outer diameter and a tapered wall thickness, thereby resulting in a constant inner diameter (see figure 2) or an increasing inner diameter (see figure 7).

4) Shohei is very clearly directed to a tubular product that is provided with a tapered wall thickness at one end. There is no suggestion in this reference that any step of the process, such as step 2(B) as referred to by the examiner, can be separated from the others or that any other type of product can be arrived at. Any such separation of steps would clearly constitute a departure from the clear teachings of this reference.

It is therefore submitted that neither Tate nor Shohei taken alone or in combination could result in the invention claimed in claims 19 and 21. Moreover, it is submitted that these reference cannot in any way be combined in the manner suggested by the examiner as each is directed to clearly different structural members.

#### 4) Rejection of claims 22 and 23 under 35 USC 103(a)

Applicant respectfully traverses the rejection of method claims 22 and 23 as being obvious in view of the combination of Withers (GB 2007569) and Shohei.

The reference to Shohei has been discussed above. Withers teaches a method of forming a “counterbore in the end of a tube”. The examiner suggests that Withers teaches all the steps of claim 22 with the exception of the last few steps wherein the thinned wall section is provided with a taper, i.e. the inner and outer diameters are reduced while maintaining a constant wall thickness. The examiner then relies on step 2(B) of Shohei to suggest that such step is taught therein and that it may be combined with Withers to result in the present invention. However, it is submitted that the combination suggested by the examiner cannot be made and, even if it were possible, would clearly result in non-working embodiments.

Firstly, as discussed above, it is submitted that the teaching of Shohei cannot be dissected to

extract only one intermediary step from a series of steps. That is, Shohei clearly teaches that the final product taught therein must have a tapered wall thickness. There is no teaching of a final product having a constant wall thickness. Although figure 2(B) of Shohei may show such a structure, there is no teaching that one can simply stop at such step. Doing so would be a departure from the clear teaching of this reference.

Thus, on this basis alone, it is submitted that the examiner's combination of Withers and Shohei is flawed.

However, it is further submitted that the combination suggested by the examiner would also go against the teaching of Withers. As taught in Withers, the invention therein is directed to a method of providing a counterbore within a tube which "may for example be used to locate a bearing for a steering column" (page 1, lines 5-8). As would be clearly understood by persons skilled in the art and as clearly taught in the reference, a counterbore comprises a shoulder provided within the subject tube, against which the bearing of a steering column (etc.) may be positioned. The examiner suggests that it is possible to further modify such a tube to taper the outer diameter thereof. However, as would be clearly understood, such a modification would result in an opening in the tube that is narrower than the counterbore itself. As such, it would be impossible for the bearing of a steering column to be inserted therein and to rest against the counterbore. In other words, to enter into the tube, the bearing must be of a smaller diameter than the opening and, in such case, the bearing would also be smaller in diameter than the counterbore. Thus, the opening, or end diameter of the tube taught in Withers must be larger than the diameter of the counterbore in order for the latter to engage the bearing element. Thus, the combination suggested by the examiner would not be made by persons skilled in the art or, in the alternative, would be non-workable.

In the result, it is submitted that claims 22 and 23 stand both novel and non-obvious over Withers and Shohei taken individually or in combination.

In view of the foregoing comments and amendments, the Examiner's reconsideration is respectfully requested and that she find the amended claims allowable over the prior art of record.

Respectfully submitted,

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